

What is claimed is:

- 1 1. A method of selecting signals to transfer between a head transponder and tail  
 2 transponder, the method comprising the acts of:  
 3 tuning an applied bit rate window of a head transponder to a  
 4 predetermined frequency;  
 5 receiving a request at the head transponder to change the bit rate  
 6 window;  
 7 at the head transponder, generating a communications signal having a  
 8 bit rate of the predetermined frequency;  
 9 at the head transponder, inserting a command into the communications  
 10 signal, wherein the command states to establish a new bit rate window;  
 11 at the head transponder, transmitting the communications signal to a  
 12 downstream element; and  
 13 at the head transponder, transferring payload of incoming signals  
 14 having a bit rate within the bit rate window.
- 1 2. The method of Claim 1, further comprising the acts of:  
 2 receiving the communications signal at the tail transponder;  
 3 detecting a change in input bit rate at the tail transponder;  
 4 at the tail transponder, generating a response signal having a similar bit  
 5 rate as the communications signal;  
 6 at the tail transponder, inserting a command into the response signal  
 7 indicating receipt of a command to set a new bit rate window; and  
 8 at the tail transponder, transferring to the head transponder a payload  
 9 of signals having a bit rate within the bit rate window.
- 1 3. The method of Claim 1, further comprising the acts of:  
 2 at the head transponder, performing bit rate verification on incoming  
 3 signals; and  
 4 at the head transponder, transferring the payload of signals having a bit  
 5 rate within the new bit rate window.
- 1 4. The method of Claim 2, further comprising the acts of:  
 2 at the tail transponder, performing bit rate verification on incoming  
 3 signals; and  
 4 at the tail transponder, transferring the payload of signals having a bit  
 5 rate within the new bit rate window.

- 1 5. The method of Claim 1, wherein the signals are transmitted over a passive  
2 optical network (PON), which is a communication fabric comprising optical fiber  
3 connected in a tree topology.
- 1 6. The method of Claim 1, wherein the signals are transmitted over a passive  
2 optical network (PON), which is a communication fabric comprising optical fiber  
3 connected in a star topology.
- 1 7. The method of Claim 1, further comprising performing FEC encoding on  
2 incoming signals at the head transponder.
- 1 8. The method of Claim 1, further comprising performing FEC decoding on  
2 incoming signals at the head transponder.
- 1 9. The method of Claim 2, further comprising performing FEC encoding on  
2 incoming signals at the tail transponder.
- 1 10. The method of Claim 2, further comprising performing FEC decoding on  
2 incoming signals at the tail transponder.
- 1 11. The method of Claim 1, further comprising the acts of:  
2 performing bit rate verification on the incoming signals at the head  
3 transponder; and  
4 at the head transponder, transferring the payload of signals having a bit  
5 rate within the new bit rate window.
- 1 12. The method of Claim 2, further comprising the acts of:  
2 performing bit rate verification on the incoming signals at the tail  
3 transponder; and  
4 at the tail transponder, transferring the payload of signals having a bit  
5 rate within the new bit rate window.